Rhodora

JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB.

Vol. 21. May, 1919. No. 245.

CONTENTS:

Boston, Mass.
1052 Exchange Building.

Providence, R. I.
Preston and Rounds Co.

RHODORA. — A monthly journal of botany, devoted primarily to the flora of New England. Price, *$1.50* per year (domestic and foreign); single copies 15 cents. Prices of Volumes 1 and 2 (1899 and 1900) on application. All remittances by check or draft, except on Boston or New York, must include ten cents additional for cost of collection. Notes and short scientific papers, relating directly or indirectly to the plants of the northeastern states, will be gladly received and published to the extent that the limited space of the journal permits. Forms will be closed five weeks in advance of publication. Authors (of more than one page of print) will receive 25 copies of the issue in which their contributions appear. Extracted reprints, if ordered in advance, will be furnished at cost.

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Entered at Boston, Mass., Post office as Second Class Mail Matter

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RUBUS IDAEUS AND SOME OF ITS VARIATIONS IN NORTH AMERICA.

M. L. Fernald.

In an attempt to organize the material of the common Red Raspberry in the Gray Herbarium the writer has found himself face to face with several different interpretations and with a plant of New England which does not appear to have been included in the seemingly sufficient "species" or "subspecies" of raspberry which have recently been proposed. In the first place, the distinguished Dr. Focke of Bremen, who has made a life-long study of *Rubus* and whose judgment of specific values in the genus should have great weight, treats *Rubus idaeus* in his *Species Ruborum* [1] as a circumpolar species with numerous geographic subspecies and varieties. Somewhat earlier, the late E. L. Greene, taking up for the Red Raspberries as a separate genus the subgeneric name *Batidaea* of Dumortier, said of the common American representative:

"B. STRIGOSA. *Rubus strigosus*, Michx., the original from Canada; but, between the high Northeast and the mountain districts of the South, there occur several excellent subspecies to be distinguished. Those proposed below are western." [2] Then follow sixteen of the subspecies of *B. strigosa* distinguished by Greene in the region from the Great Lakes westward. To be sure the subspecies are all given binomials, *B. heterodoxa*, *B. amplissima*, etc., like true species and at variance with the ordinarily recognized method of indicating subspecies; but in view of Greene's insistence upon accurate English and

[1] Fock , Species Ruborum pars ii. 207–211: Biblioth. Bot. 72 II (1911).
[2] Greene, Leaflets, i. 238, 239 (1906).

Latin in others (witness pages 229–236, immediately preceding his discussion of *Batidaea*), it is not to be expected that he would write "there occur several excellent subspecies to be distinguished. Those proposed below are western" unless he intended them as *subspecies*, not *species*. The latest treatment of the American Red Raspberries is by Rydberg in the North American Flora (xxii. pt. 5) where he restores the plants to *Rubus* and recognizes in North America eleven species.

Thus it will appear that the student of the flora of North America is left somewhat perplexed as to the status of our Red Raspberries; and, with no desire to add to the perplexity but rather to present certain new evidence and the result of a study of the group at intervals during several years, the following treatment of the plants, especially of eastern America, is presented.

The commoner raspberries of North America and of eastern Asia are distinguished from the European *Rubus idaeus* by their strong tendency to bear stipitate glands on the pedicels, peduncles, new canes, and often on other regions of the plant, as the calyx or petioles, and by bearing bristle-like prickles; the true *R. idaeus* quite lacking both the glands and the bristles, but often having on the pedicels, new canes, etc., strong broad-based prickles somewhat as in our *R. occidentalis*, from which species it is at once distinguished by its more racemose inflorescence, red berries, erect canes, and pinnate leaves on the new canes.

R. idaeus (typical) is commonly cultivated and frequently spreads to roadsides in the neighborhood of gardens, but by neither Focke nor Rydberg is it admitted as more than an introduced plant in North America; although by Focke a close ally, glandless and bristleless and differing from Eurasian *R. idaeus* only in the more abundant dark prickles of the calyx, etc., and a slight tendency to less pubescent branches, is set off as *R. idaeus*, subsp. *melanotrachys*, from northwestern America and by Rydberg is maintained as a distinct species. In the Northwest also is another variant which is quite glandless and bristleless but with the characteristic prickles of *R. idaeus;* though this plant, from Spokane, Washington, has the leaves quite glabrate and green on both surfaces, thus strongly suggesting Focke's description of *R. idaeus*, var. *denudatus* Schimp. & Spenn.: "glabriusculus; foliola subtus viridia."[1] Other specimens from Spokane (Piper's

[1] Focke, l. c. 208.

no. 2268), quite like the first in aspect and prickles, differ, however, in having the pedicels copiously glandular-hispid and viscid-puberulent and thus seem to be the plant which has been described as *Batidaea strigosa*, subsp. *B. peramoena* Greene and which has recently appeared as *Rubus paramoenus* (Greene) Rydberg. These two plants from the same locality, one without stipitate glands and viscid pubescence on the pedicels, the other with them, and in all other characters so similar that their discriminating collector labeled both *Rubus strigosus*, are representative of the variability of the characters which by some authors are taken as dividing our Red Raspberries into distinct species.

As already stated, neither Focke nor Rydberg admit true *Rubus idaeus* as indigenous in North America, although very close allies are recognized in the Northwest and by Rydberg Greene's supposedly indigenous American *Batidaea strigosa*, subsp. *B. itascica*, described from Lake Itaska, Minnesota, is reduced without question to the Eurasian *Rubus idaeus*.[1] Furthermore, on the still uncleared and essentially uninhabited Brion Island, the remote wooded island north of the main archipelago of the Magdalen Islands in the Gulf of St. Lawrence, the Red Raspberry of the indigenous thickets is strictly without bristles or glands and in every particular seems to be perfectly pure *R. idaeus*, the smooth-caned extreme which is included by Focke in his subsp. *vulgaris* and which has sometimes been designated as a forma *inermis*. At other points in the East, as Peaks Island in Casco Bay, perfectly typical *R. idaeus*, there with slightly prickly canes, occurs on the rocky shores as if indigenous, although at the Peaks Island station there is greater possibility of introduction than on the practically unsettled Brion Island.[2] Similarly in the Middle West where *R. idaeus*, according to Rydberg, includes *Batidaea itascica* Greene, the shrub seems to be indigenous. The type locality of the latter plant has been noted; and an entirely similar plant, in its flowering cane quite inseparable from European *R. idaeus*, was collected by Dr. J. Lunell on the shores of Pleasant Lake, Pierce County, North Dakota, in 1901 and distributed as the endemic North American *R. strigosus;* while the fragment in the Gray Her-

[1] See Rydberg, l. c., 445.

[2] Brion Island, although discovered by Cartier, has remained a remote nearly uninhabited islet covered with dense thicket. Its two families are those of the light-keeper and of a solitary farmer.

barium of Rydberg's no. 657 from the Black Hills of South Dakota, labelled by its collector "*Rubus strigosus*" shows neither bristles nor glands in the inflorescence. From these facts it will be clear that, although by no means so common as the bristly and glandular shrubs, the bristleless and glandless *R. idaeus* is locally indigenous (as well as introduced) in North America.

Although the presence of glands and fine bristles characterizes much of the North American and eastern Asiatic Red Raspberry as opposed to the typical *Rubus idaeus* of Eurasia and of local occurrence in North America, a plant which when prickly bears stronger broad-based prickles, strong prickles are by no means confined to the glandless shrubs. In 1858 Regel & Tiling described from eastern Siberia as *R. idaeus*, var. *aculeatissimus*[1] a shrub which has firm broad-based prickles as well as glands. Later an Asiatic and North American plant, which in its details is inseparable from Tiling's original material of var. *aculeatissimus* from Ajan, a duplicate of which is in the Gray Herbarium, was proposed by Focke as *R. idaeus*, subsp. *melanolasius* or *R. idaeus*, subsp. *R. melanolasius*,[2] under the impression that the name var. *aculeatissimus* had never been published.[3] This plant, described by Focke from eastern Siberia and northwestern America, is taken up by Rydberg as a strictly American species, *R. melanolasius*, and to it are reduced as synonyms four of Greene's binomial subspecies of *Batidaea strigosa*.

In eastern America there also occurs a Red Raspberry in which not only the glands but the fine bristles of the American and eastern Asiatic shrubs are abundantly mixed with the stronger prickles of the European. This is a shrub which occurs on steep clay banks of Casco Bay, Maine, an extreme obviously near to *R. idaeus*, var. *aculeatissimus*, but with very tomentose (as well as prickly, setose and glandular) new canes. These two illustrations are sufficient to indicate that, although the absence of glands and bristles and the presence only of stoutish prickles in the upper parts of the plant is a characteristic of European *Rubus idaeus*, the lack of such stoutish

[1] Regel & Tiling, Fl. Ajan. 87 (1858).

[2] Focke, like Greene, unfortunately seems to have had slight regard for the conventional methods of writing plant-names and consequently for the convenience and clear understanding of others, for in the original publication he called the plant a subspecies but (like Greene in case of the subspecies of *Batidaea strigosa*) gave it a binomial designation as well as a subspecific name, a practice long discountenanced and now forbidden by the International Rules.

[3] Focke, Abh. Nat. Ver. Bremen. xiii. 472 (1896).

prickles is by no means a constant characteristic of the glandular and bristly American and eastern Asiatic series, and that species erected upon these characters alone cannot be long maintained. As geographic varieties such plants have some strength and their true relationship is, it seems to the writer, best so expressed.

The commonest plants of eastern America lack the strong prickles but have slender bristles and glands upon the new growth and about the inflorescence. There are two common varieties and others of local occurrence. In the plant which is commonly interpreted as Michaux's *R. strigosus*, the first of the American Red Raspberries to be distinguished, the bristles are ordinarily rather scattered or few or sometimes quite wanting on the canes which have the cortex glabrous or merely glaucous, often becoming lustrous in age. This shrub is abundant especially in the East, but it extends from Newfoundland to British Columbia, south to Virginia, the Great Lake states, and Wyoming. Specimens from Japan, especially from the island of Yezo, are quite inseparable from the American *R. strigosus* in all details and probably represent *R. Matsumuranus* Léveillé & Vaniot.[1]

The other common variety differs from var. *strigosus* in having the new canes closely pubescent and copiously bristly, the grayish pubescence among the numerous bristles giving the canes a peculiar fuscous or dusty aspect. This seems to be the plant which Richardson called *R. idaeus β. canadensis*, from west of Hudson Bay and described as having the "canes fuscous, with crowded small rigid setae."[2] Var. *canadensis* occurs from Labrador to Alaska, south to North Carolina, Michigan, South Dakota, and Colorado; and material from Sachalin Island, northwest of Japan, seems quite inseparable from many sheets of North American var. *canadensis*. The Sachalin Island plant is apparently *R. sachalinensis* Léveillé in Fedde, Repert. vi. 332 (1909), taken up by Focke as *R. idaeus*, subsp. *sachalinensis* and said to have "Folia omnia ternata . . . fructus exsuccus."[3] But the North American specimens of *R. idaeus*, var. *canadensis*, show only ternate leaves on the fruiting canes and very often ternate leaves on the new canes. Furthermore, in view of the scanty material from Sachalin Island and the fact that in defining the plant Focke found it necessary to quote the original description rather than draw up a

[1] Léveillé & Vaniot, Bull. Acad. Géogr. Bot. xx. 135 (1909).
[2] Richardson, Appendix, 2d ed. in Frankl. Journey, ed. 1, 747 (1823).
[3] Focke, Sp. Rub. 209, 210 (1911).

new one based upon abundant material and correlated with his other descriptions, it seems probable that the "dry fruit" of the Sachalin Island plant is *young* fruit, which at that stage is dry in all the varieties of *R. idaeus*.

Var. *canadensis* has recently been called *R. subarcticus* (Greene) Rydberg and *R. carolinianus* Rydberg. In treating this variety as two species Rydberg placed the emphasis upon the degree to which the sepals bear caudate tips; *R. carolinianus*, restricted by him to the mountains of North Carolina, having the "sepals ovate, more than 1 cm. long, caudate-acuminate, the slender tip from half to fully as long as the sepal proper,"[1] while *R. subarcticus*, with southern limits placed at Nova Scotia and British Columbia and "apparently also Nantucket" is said to have "sepals broadly ovate, abruptly acuminate . . . about 6 mm. long."[2] In the key, it is true, the so-called new species, *R. carolinianus*, which is subsequently said to have "sepals ovate," is placed in a section with "Sepals narrowly lanceolate." The definition would thus seem to be loose enough to assure the name covering considerable material; but, unfortunately some North Carolina specimens show sepals even less than 6 mm. long and with very short tips, while the writer has before him many specimens from Labrador, Newfoundland, Canada, and New England with sepals not only a full cm. long, but sometimes even 2–2.5 cm. in length; and on some individual branches occur both short-tipped and long-appendaged sepals. In fact, in a single New Hampshire "clearing" one may collect specimens having sepals with or without caudate appendages and of any length he chooses from 5 mm. to 2.3 cm. The fact is, that this character is extremely variable and not one to use unsupported by stronger characters even in varietal separations. Rydberg himself recognized this when in his key he included *R. strigosus* under both headings: "Sepals. . . . gradually acuminate" and "Sepals. . . . abruptly acuminate." The ranges for his *R. carolinianus* and *R. subarcticus* would seem to preclude the occurrence of either between North Carolina and Canada, except "apparently" on Nantucket. Both of them, however, i. e. the one variety, occur in all the New England states (except possibly Rhode Island), being common in some thickets about Boston, occasional on Cape Cod, and pushing southward into the Pennsylvania mountains, so that the

[1] Rydberg, N. A. Fl. l. c. 447 (1913).
[2] Rydberg, N. A. Fl. l. c. 448 (1913).

gap between the North Carolinian and the Canadian areas is of no more significance than the contradictory characters of the sepals.

These two shrubs, *Rubus idaeus*, vars. *strigosus* and *canadensis*, include the great bulk of Red Raspberries in the East; yet there are two local variants which so closely simulate European varieties of true *R. idaeus* as to be of great interest. In Europe among the recognized varieties of the glandless *R. idaeus* are var. *angustifolius* Schmidely and var. *anomalus* Arrhenius. The former has very narrow lanceolate leaflets, often incised, and is closely simulated by a plant of southeastern Newfoundland which has been described as *R. strigosus*, var. *caudatus* Robinson & Schrenk; but the Newfoundland variety has the new canes pubescent as in *R. idaeus*, var. *canadensis*.

The American representative of the European *R. idaeus*, var. *anomalus*, is the plant recently named by Blanchard *R. Egglestonii* and previously discussed at length by the present writer and illustrated as *R. idaeus*, var. *anomalus*.[1] The Vermont *R. Egglestonii* is exactly parallel with *R. idaeus*, var. *anomalus*, differing from *R. idaeus*, var. *strigosus*, as var. *anomalus* differs from typical *R. idaeus*. It is of peculiar interest as a reversionary variety in which the shorter rounder leaves and leaflets are thought to repeat the more simple foliage of an ancestral type. In this connection it is noteworthy that on old fertile canes of the common var. *strigosus* occasional shoots bear the simple rounded leaves of the so-called *R. Egglestonii*, thus supporting the generally accepted argument that var. *anomalus* (and of course the parallel var. *Egglestonii*) is a reversionary variant.

The variations of *Rubus idaeus* in eastern America may be summarized as follows.[2]

A. Inflorescence without glands or minute bristles: prickles (when present) of the new canes strong and obviously broadened at base. ..... *R. idaeus* (typical)

A. Inflorescence bearing glands and minute bristles: new canes (except in an occasional prickleless form of var. *strigosus*) bearing slender bristles and often stipitate glands B.

B. Bark of the new canes glabrous or at most glaucous beneath the bristles, in age becoming lustrous C.

C. Prickles mostly strong and obviously broadened at base. ..... var. *aculeatissimus*.

[1] See Rhodora, ii. 195–200, t. 20 (1900).

[2] It may be stated that this discussion was written three years ago, but was held in manuscript in order to check the characters of the varieties in the field. During the three subsequent seasons the writer, sometimes accompanied by Mr. Bayard Long, sometimes by Professor A. S. Pease, closely watched the Red Raspberries and collected extensively from 35 regions in New England, from Aroostook County to Cape Cod and the Connecticut Valley.

C. Prickles (when present) bristleform and not much thickened at base D.
D. Leaves of the new canes with oblong to ovate acuminate leaflets; of the fruiting canes with 3 (rarely 5) similar but shorter leaflets.
New canes bristly.....var. *strigosus*.
New canes without bristles..var. *strigosus*, forma *tonsus*.
D. Leaves of the new canes with 3 short ovate to suborbicular round-tipped or blunt leaflets; of the fruiting canes simple and rounded or at most 3-lobed..var. *Egglestonii*.
B. Bark of the new canes cinereous-tomentulose beneath the prickles.
Many of the prickles stout and broad-based.....var. *heterolasius*.
Prickles all bristleform.....var. *canadensis*.

R. IDAEUS L. Sp. Pl. i. 492 (1753). *R. idaeus vulgatus* Arrhen. Monog. Rub. Suec. 12 (1840). *Batidaea strigosa*, subsp. *B. itascica* Greene, Leaflets, i. 239 (1906).— Indigenous on the Magdalen Islands (forma INERMIS Kaufmann in Flora Exsiccata Bavarica, no. 25), and in Minnesota and North and South Dakota, presumably elsewhere; also generally introduced and escaping from cultivation. In various regions of Quebec and northern Maine strongly approached by clearly indigenous forms of var. *strigosus* and *canadensis*.

Var. ACULEATISSIMUS Regel & Tiling, Fl. Ajan. 87 (1858). *R. idaeus*, subsp. *melanolasius* Focke, Abh. Nat. Ver. Bremen, xiii. 473 (1896). *R. melanolasius* Focke, l. c. (1896); Rydberg, N. A. Fl. xxii. 448 (1913). *Batidaea strigosa*, subsp. *B. cataphracta* Greene, Leaflets, i. 241 (1906).— Eastern Asia and western North America, extending east to MICHIGAN: Vermillion, Chippewa Co., *C. K. Dodge*, no. 64.

Var. STRIGOSUS (Michx.) Maxim. Bull. Acad. St. Pétersb. xvii. 161 (1872). *R. strigosus* Michx. Fl. Bor.— Am. i. 297 (1803). *R. pensilvanicus* Poir. in Lam. Encyc. vi. 246 (1804). *Batidaea strigosa* (Michx.) Greene, Leaflets, i. 238 (1906). *B. strigosa*, subsp. *B. heterodoxa* Greene, l. c. 239 (1906), fide Rydberg. *B. strigosa*, subsp. *B. elegantula* Greene, l. c. 239 (1906), fide Rydberg. *R. idaeus*, var. *aculeatissimus*, Robinson & Fernald in Gray, Man. ed. 7, 486 (1908) in part, not Regel & Tiling, Fl. Ajan. 87 (1858). *R. Matsumuranus* Léveillé & Vaniot, Bull. Acad. Geogr. Bot. xx. 135 (1909). *R. idaeus*, subsp. *strigosus* (Michx.) Focke, Spec. Rub. pt. 2, 209 (1911). *R. strigosus*, var. *borealis*, Spach ex Focke, l. c. (1911).— Southern Newfoundland and Gaspé Co., Quebec, to southern British Columbia, south to Virginia, the Great Lake States, and Wyoming; also eastern Asia.

Var. STRIGOSUS, forma **albus** (Fuller), n. comb. *R. strigosus*, var. *albus* Fuller ex Bailey, Cyc. Am. Hort. 1582 (1902). *R. idaeus*, var. *aculeatissimus*, forma *albus* (Fuller) Fernald, RHODORA, x. 50 (1908).— Fruit amber-white.— Rare; seen only from NEW HAMPSHIRE: rocky pasture, Cobb's Hill, Alstead, August 5, 1900, *Fernald*.

Var. STRIGOSUS, forma **tonsus**, n. f., turionibus laevibus, aciculis nullis.

New canes smooth; the bristles wanting.— Occasional, Gaspé Co., Quebec to Vermont. QUEBEC: at timberline, Mt. Albert, Gaspé Co., August, 1905, *Fernald & Collins*. MAINE: alluvial woods, Abbot, August 15, 1916, *Fernald & Long*, no. 13,846 (TYPE in herb. N. E. Bot. Club); brooksides and gullies in wooded river-terraces, Fairfield, July 24, 1916, *Fernald & Long*, no. 13,844: alluvial woods, Vassalboro, July 6, 1916, *Fernald*, no. 13,843; alluvial thicket, Limington, August 28, 1916, *Fernald & Long*, no. 13,847; boggy woods and thickets, Gerrish Island, Kittery, *Fernald & Long*, no. 13,845. VERMONT: Hancock, July 7, 1908, *E. F. Williams*.

Var **Egglestonii** (Blanchard), n. comb. *R. idaeus*, var. *anomalus* Fernald, RHODORA, ii. 195, t. 20 (1900), not Arrhenius. *R. Egglestonii* Blanchard, Torreya, vii. 140 (1907).— Known only from VERMONT: limestone ledges, Cavendish, *W. W. Eggleston;* dry rocky soil, Townshend, *L. A. Wheeler*.

Var. **heterolasius**, n. var., turionibus cum ramis pedunculisque viridescentibus tomentosis glandulosis setosis grosse aciculatisque; foliolis subtus albis subtiliter crenatis.

New canes, branches and peduncles greenish, tomentose, glandular, bristly and coarsely prickly: leaflets white beneath, finely crenate.— MAINE: steep clay bank, Eastern Promenade, Portland, June 30, 1909, *Fernald*, no. 1935 (TYPE in Gray Herb.).

Var. CANADENSIS Richardson, Appendix, ed. 2. in Frankl. Journey, ed. 1, 747 (1823). *Batidaea strigosa*, subsp. *B. subarctica* Greene, Leaflets, i. 242 (1906). *R. sachalinensis* Léveillé in Fedde, Repert. vi. 332 (1909). *R. idaeus*, subsp. *sachalinensis* (Léveillé) Focke, Sp. Rub. pt. 2, 210 (1911). *R. carolinianus* Rydberg, N. A. Fl. xxii. 447 (1913). *R. subarcticus* (Greene) Rydb. l. c. 448 (1913).— Labrador to Alaska, south to Nantucket and Cape Cod, Massachusetts, southeastern Connecticut, locally in the mountains to North Carolina, Michigan, South Dakota, and Colorado; also eastern Asia.

Var. CANADENSIS, forma **caudatus** (Robinson & Schrenk), n. comb. *R. strigosus*, var. *caudatus* Robinson & Schrenk, Can. Rec. Sci. vii. 14 (1896).— Known only from the original collection.

The variations confined to western America include the following:

Var. **melanotrachys** (Focke), n. comb. *R. idaeus*, subsp. *melanotrachys* Focke, Abh. Nat. Ver. Brem. xiii. 472, 473 (1906). *R. melanotrachys* Focke, l. c. (1906).

Focke did not regard this plant as a variety of *R. idaeus* but as a *subspecies*. He, like the majority of European taxonomists, distinguishes clearly between the two categories and in his *Species Ruborum* indicates under *R. idaeus*, subsp. *vulgatus*, many varieties.

Var. **arizonicus** (Greene), n. comb. *Batidaea strigosa*, subsp. *B. arizonica* Greene, Leaflets, i. 243 (1906). *R. arizonicus* (Greene) Rydberg, N. A. Fl. xxii. 446 (1913).

Var. **peramoenus** (Greene), n. comb. *Batidaea strigosa*, subsp. *peramoena* Greene, l. c. 241 (1906). *R. peramoenus* (Greene) Rydberg, l. c. (1913).

Var. **acalyphaceus** (Greene), n. comb. *Batidaea strigosa*, subsp. *B. acalyphacea* Greene, l. c. 240 (1906). *R. acalyphaceus* (Greene) Rydberg, l. c. 248 (1913).

The last is similar to var. *heterolasius* but has darker often purple canes and branches and coarsely serrate leaflets.

Gray Herbarium.

FURTHER NOTES ON IMPATIENS BIFLORA.

C. A. Weatherby.

Impatiens biflora, forma Peasei.— When this name was published,[1] I had never seen living material of the plant in question. The description (for which, as it appeared, I was responsible) was drawn up from the reports of three trustworthy botanists who had collected the plant and from statements on herbarium labels. All agreed in describing the flowers as "pink" or "roseate." Moreover, the flowers in certain herbarium specimens examined showed traces of pink coloration.

Since that time, I have had an opportunity to examine living plants of f. *Peasei* at the type station and at two other localities in the White Mountain region — with somewhat disconcerting results. Points of view, it appears, make a difference. The flower of the real f. *Peasei* is not pink throughout as described and as I had supposed. Seen from in front (that is, as one looks directly into the throat of the perianth) it does, indeed, give the impression of a pink blossom; and this fact doubtless explains the statements of collectors in regard to it. But the pink coloration is confined to the inner surface of the spreading perianth-parts, where, in all forms, the spots are usually most numerous. The back of these same parts and the saccate sepal— really,

[1] Rhodora, xix. 116, July 2, 1917.

the greater part of the perianth — is cream-color. Cream is the ground-color of the flower; and ground-color is the basis I used in delimiting the forms of *I. biflora* and, I am convinced, the only practicable one. Forma *Peasei* is, then, essentially only a phase of f. *albiflora* [1] in which the pink spots frequently present in that form are very numerous and coalescent into solid patches of pink.

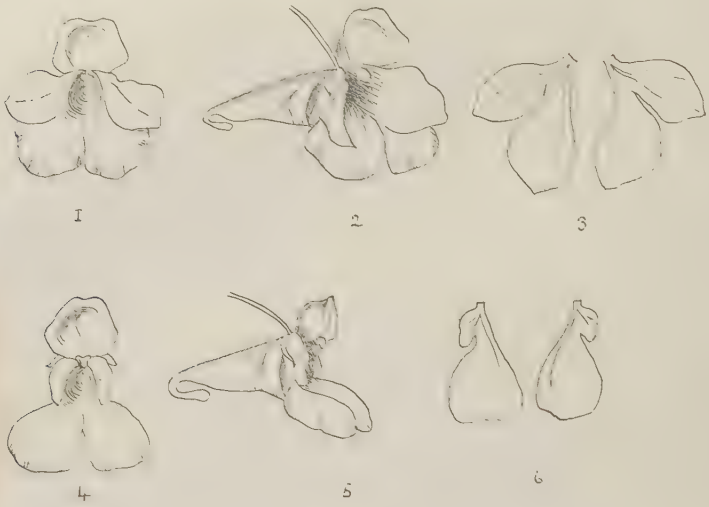
Such a phenomenon occurs commonly enough in both the typical form and f. *citrina*. In the former, flowers with few, scattered spots and with very many spots merging into broad patches of crimson have been observed on the same plant. However, in these two forms the phases with abundant, coalescent spots occur as scattered individuals, mingled with typical plants and likely to be found wherever they are. Forma *Peasei*, on the contrary, occurs in the White Mountain region in pure colonies and there appears to take the place of f. *albiflora* nearly or quite completely. In view of this more definite segregation and of its undoubtedly striking appearance, f. *Peasei* may be allowed to stand, at least pending further investigation. Its description, however, should be amended to read: "Perianth cream-color, the pink spots numerous and coalescent on the inner surfaces of the spreading perianth-parts into patches of solid pink."

I. BIFLORA, forma **platymeris** f. nov.— Petalorum lobis basalibus dilatatis magnis, apicale aequantibus. Basal lobes of the petals large, equalling the apical in size and often over-lapping them.—Moist, shaded ground, with the typical form, Southbury, Connecticut, August 13, 1918, *Una F. Weatherby* (Herb. C. A. Weatherby, no. 4357).

This interesting form was detected by Mrs. Weatherby during one of the summer field meetings of the Connecticut Botanical Society. In the typical form of *I. biflora*, the petals are unequally two-lobed on the outer edge, the basal lobe being small, about one-half the size of the dilated apical lobe. In f. *platymeris*, the basal lobe is about as large as the apical, or even slightly larger, and often over-laps it, giving the flower the appearance of being partially doubled. The accompanying sketches show these differences. If, as is supposed, the two-lobed petals of *Impatiens* have resulted from the union of two petals of a simpler and more regular ancestral flower, f. *platymeris*

[1] It should be remembered that Rand & Redfield's original description of f. *albiflora* was drawn to cover both white and cream-colored flowers. Only the latter were seen, however; and the name, though inappropriate, must be retained for that form. See RHODORA, l. c.

may represent a more primitive condition than typical *I. biflora*, since the development would have been from the more to the less regular and, in the former, the petals would naturally have been of the same size or more nearly so.



Flowers and Petals (the latter removed and spread out) of *Impatiens biflora* (figs. 4–6) and of f. *platymeris* (figs. 1–3).

In f. *platymeris* the erect upper sepal tends to be less concave than in the typical form.

About eight plants of the new form were found, growing intermingled with numerous individuals of the typical form and, except for the floral characters, in no way different from them. As the characters of f. *platymeris* are not readily seen in herbarium material, patches of jewel-weed were examined at every opportunity during the rest of the season in an effort to find it elsewhere; but without success. Mr. Walter Deane and Dr. A. S. Pease have very kindly made similar search in the White Mountain region where, a memory of uncommonly large jewel-weed flowers suggested to me, this form might occur; but they likewise failed to find it.

East Hartford, Connecticut.

NECESSARY CHANGES IN BOTANICAL NOMENCLATURE.

Oliver Atkins Farwell.

Populus balsamifera Linn. Sp. Pl. ii. 1034 (1753); Miller, Dict. ed. 8, no. 5 (1768). *P. angulatus* Ait. Hort, iii. 407 (1789).—*Populus balsamifera* Miller, l. c., is referred by the Index Kewensis to *P. deltoides* and to *P. heterophylla.* A careful comparison of Miller's description with that of Linnaeus shows, however, that the two are identical, Miller having copied the technical description of Linnaeus, l. c., *verbatim.* Both quote Hort. Cliff. 460. A reference to the latter publication shows that species No. 4 *Populus foliis cordatis crenatis* is the one referred to. This is founded solely on *Populus nigra, folio maximo, gemmis balsamum odoratissimum fundentibus* Catesby, Car. i. 34, t. 34 (1731), a Carolina species, also quoted by Miller, l. c. There is therefore no question as to the identity of the one with the other and that the binomial *P. balsamifera* belongs to the Carolina Poplar, as usually understood, since in last analysis the Linnaean species is founded upon that of Catesby.

P. tacamahacca Miller, Dict. ed. 8, no. 6 (1768). *P. balsamifera* Marshall, Arbust. Amer. 107 (1785), & French ed. 173 (1788). *P. viminea* Marsh. l. c. *P. candicans* Ait. Hort. iii. 406 (1789). *P. ontariensis* Desf. Hort. Par. *P. balsamifera* var. *candicans* A. Gray, Man. ed. 2, 419 (1858).— This is the common Balm of Gilead. Miller's name, which is the oldest, should be adopted for it instead of the later one of Aiton. A form with very scanty pubescence is

Var. **Michauxii** (Henry), n. comb. (*P. balsamifera* var. *Michauxii* Henry.)

Another form, generally without cordate leaves and pubescence, is the Northern Balsam Poplar that has so generally been known as *P. balsamifera.* In accordance with priority this should bear the name

Var. **lanceolata** (Marsh.), n. comb. *P. balsamifera* Linn. Syst. Nat. ed. 13, ii. 656 (1770) and possibly of some earlier editions, and also of most subsequent authors but not of Linn. Sp. Pl. ii. 1034 (1753). *P. balsamifera* var. *lanceolata* Marsh. Arbust. Amer. 108 (1785), & French ed. 173 (1788).

Veronica persica Poir. Dict. viii. 542 (1808). *V. Buxbaumii*

Ten. Fl. Nap. i. 7, t. 1 (1811).— *Veronica Tournefortii* C. C. Gmelin, Fl. Bad. i. 39 (1805), is the name employed in our local manuals to designate the plant that has, at times, been passing under the names of *V. Buxbaumii* or *V. byzantina*. A reference to Gmelin's Flora Baden shows: (1) that the specific name is based upon Tournefort's *Veronica orientalis, foliis Hederae terrestris, flore magno;* (2) that the synonymy quoted is the Tournefortian species just mentioned, *V. filiformis* Sm. Trans. Linn. Soc. i. 195 (1791), and Buxbaum, Plantae minus cognitae Cent. i. t. 40, f. 1 (1727), all these being identical; (3) that the greater part of the description applies to *V. filiformis* Sm. The description of the leaf is that of *V. Buxbaumii*. While it is more than probable that Gmelin intended to include under his name both the species then known as *V. filiformis* Sm. and that which was later called *V. Buxbaumii* Ten., a careful analysis of all the factors to be considered can not leave any doubt but that he intended to make the Tournefortian species the type of his own and this conclusion is particularly evidenced by the specific name itself which certainly cannot have been derived from any other element. Since a binomial stands or falls with the element upon which it is founded, *V. Tournefortii* becomes a synonym of the older *V. filiformis* Sm. and its retention for *V. Buxbaumii* is erroneous. *V. persica* Poir. seems to be the oldest name applicable and should be taken up instead of *V. Tournefortii* for the species long known as *V. Buxbaumii*.

Viburnum Opulus Linn. var. americanum (Mill.) Ait. In Rhodora, xx. 14–15 (1918) Mr. S. F. Blake gives his reasons for dropping the "(Mill.)" from the authority for this variety and retaining "Ait." only. The reasons are that Miller's herbarium specimen of his *Viburnum americanum* is nothing more nor less than *Hydrangea arborescens* Linn. [Therefore by inference Miller's species is a mere synonym of *Hydrangea arborescens* Linn.] and that as Aiton made no reference to Miller's publication, Miller should not be a part of the author-citation. The above argument of Mr. Blake is of the nature of a boomerang for it is an excellent one against the practice he follows of adopting old herbarium specimens as types of species. Miller calls his species the Guelder Rose and says it has red berries, factors that will not permit of the species being referred as a synonym to *Hydrangea arborescens*. While Aiton did not mention Miller's publication there can be no doubt that he knew of it and that it was this knowledge that led him, when describing the plant as a variety, to use

the same name that Miller did. The authority therefore should remain as heretofore "(Miller) Ait."

It would be interesting to know if Miller's *Hydrangea arborescens* is represented in his herbarium and if so by a specimen of what species. Is it perhaps *Viburnum americanum*, thus proving another instance of the interchange of labels or of specimens? Philip Miller was too discriminating a botanist ever to have described in the same volume identical plants under two such widely diverse genera as *Hydrangea* and *Viburnum*.

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Bidens connata Muhl., var. **gracilipes**, n. var., foliis primariis lobatis, lobis 2–4 basilaribus divergentibus decurrentibus, lobo terminali foliisque superioribus lanceolato-attenuatis anguste serratis dentibus subfalcatis, petiolis gracilibus vix marginatis; achaeniis exterioribus 3–4 mm. longis, interioribus 4.5–5 mm. longis aristis marginalibus 2–2.5 mm. longis.

Primary leaves lobed, the 2–4 lobes basal, divergent, decurrent; the terminal lobe and the upper leaves lance-attenuate, slenderly serrate with subfalcate teeth; petioles slender, scarcely margined: outer achenes 3–4 mm. long; the inner 4.5–5 mm. long, with marginal awns 2–2.5 mm. long.— Massachusetts: peaty margins of small ponds west of White Pond, Chatham, September 9, 1913, *Fernald & Long*, no. 10,683; quagmire in woods south of Sparrow Young's Pond, Chatham, August 20, 1918, *Fernald & Long*, no. 17,606; borders of peaty quagmires east of Buck Pond, Harwich, August 30, 1918, *Fernald & Long*, no. 17,607; sandy beach of Seymour Pond, Harwich, September 19, 1918, *Fernald & Weatherby*, no. 17,608 (type in Gray Herb.); wet shore, Mashpee Pond, Mashpee, September 16, 1916, *Bean, Bird & Knowlton*.

In its slender-petioled leaves near *B. connata*, var. *petiolata* (Nutt.) Farwell, but differing in the conspicuously lobed primary leaves and the very short achenes, the achenes of well developed var. *petiolata* being larger, the outer up to 6.5 mm. long, the inner up to 8 mm. long and with marginal awns up to 4.7 mm. long. In its conspicuously lobed leaves and short achenes var. *gracilipes*, which is abundant on Cape Cod, is close to typical *B. connata;* but the latter plant has the

less sharply toothed leaves on broadly winged petioles and the achenes, although smaller than in var. *petiolata*, are not so small as in var. *gracilipes*, the outer being 4–5.3 mm. long, the inner 5–6.5 mm. long and with marginal awns 2.2–3.6 mm. long.

Very young specimens from peaty shores of the Little Ossipee River, Limington, Maine (*Fernald & Long*, no. 14,843) may belong here.— M. L. Fernald, Gray Herbarium.

An Omission in the preliminary List of New England Ranunculaceae.— By a regrettable oversight, chiefly my own, the one New England record for *Cimicifuga racemosa* (L.) Nutt., var. *dissecta* Gray was omitted from the list of New England *Ranunculaceae* published in Rhodora, xx. 182. The plant in question was collected by Dr. E. H. Eames at Stratford, Conn., in 1893 and was duly included in the Connecticut Flora. There is also a specimen in the Gray Herbarium. *C. racemosa*, var. *dissecta* should have been entered in the list and marked with a cross.— C. A. Weatherby, East Hartford, Connecticut.

Vol. 21, no. 244, including pages 73 to 88, was issued 9 May, 1919.